

# **Urban Planting Manual**

for Riyadh Green Program



الحالج

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# Introduction

The Green Riyadh program aims to strategically increase the quality and quantity of vegetation Riyadh.

The species selection approach for vegetation is driven primarily by environmental criteria. The key objectives of species selection are to:

- 1. Reduce irrigation demand by selecting vegetation with low water requirements, ideally adapted to the climate conditions of Riyadh.
- 2. Increase shade trees to promote walking and cycling.

Best practice will improve growing conditions and increase the quality of the trees in the city of Riyadh.

Following these principles, several plants are to be avoided, such as:

- Invasive plants like Prosopis Julifora.
- Non-adapted plant species
- Palm trees due to their high water requirements and light canopy that does not provide shade.
- High water requirement plant species or species with aggressive roots, including Conocarpus.



shade tree symbol



# **Objective**

To identify plant species that are suitable for the urban conditions of Riyadh and to highlight the best planting method to achieve sustainability.



# **Targeted locations**



1. Public service facilities



2. Educational facilities



3. Recreational Facilities

4. Neighborhoods Gardens



5. Street sidewalk, roads and parking







7. Natural areas afforestation

6. Factories







Identify the appropriate place for plantation



Present appropriate planting specifications





Aid proper plant species selection



# I. Guidelines for specifications of urban landscape planting:

- 1. Design planting specifications.
- 2. Irrigation requirements.
- 3. Irrigation requirements.

## 1- Guidelines for specifications of urban landscape planting.

#### a. Tree size:

Determine the size of trees to be planted and classify them as follows:

#### B. Tree spacing:

The spacing between trees (based on trunk to trunk). can be measured bymaximum size of crown..

Tree size	Heigh /meters	Crown radius/meters	Trunk thickness/ meters	In between space / meters
Big	More than 10	More than 10	More than 0.5	15-10
Meduim	10-5	10-5	Less than 0.5	10-8
Small	Less than 5	Less than 5	Less than 0.2	8-6

## C. Grreeing percentage minimum 1 tree for 70 M2.

Location/	Safety distance / meters
Path way	More than 2
Fence	More than 2
Walk way	More than 0.75
Lighting pole	More than 6

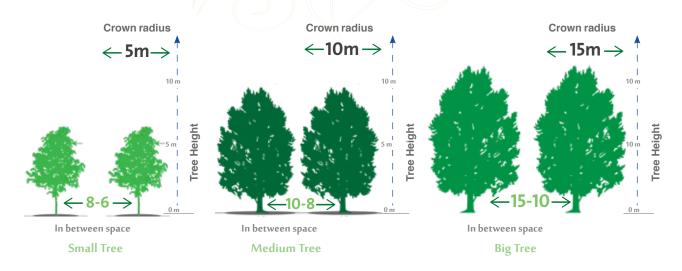


Figure (1) Tree size and spacing distance

## D. Branching point height:

The distance between ground and the crown branching.

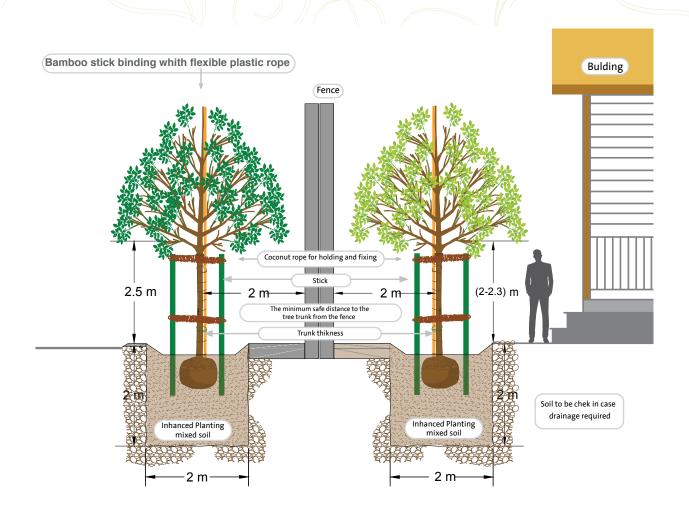
#### E. Supporting and sticking trees:

Trees after planting in different location of street or gardens requiring support and correct guidance to protect slanting down according Figure 2

#### F. Tree pit size

The depths of the tree pit are determined by and size of the tree:

Tree Size	Planting pit Size			
liee 3ize	Length	Width	Depth	
Small tree	1.2 m	1.2 m	1.2 m	
Big and medium tree	2 m	2 m	2 m	
Shrubs	0.5 m	0.5 m	0.5 m	
Ground cover	0.3 m	0.3 m	0.3 m	



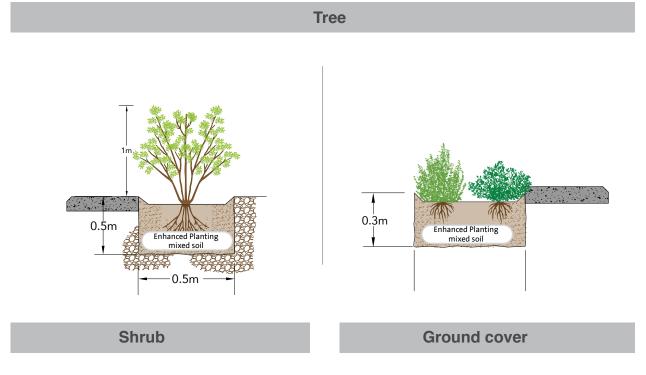


Figure (2) Tree Planting specifications



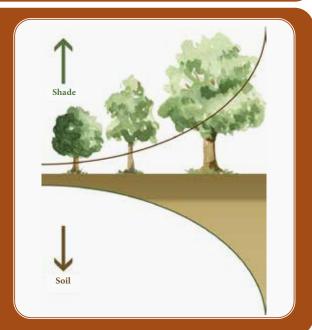
#### II. Soil:

A- SOIL SPECIFICATIONS.

B- PLANTING SOIL MIX RECOMMENDATIONS.

#### A. SOIL SPECIFICATIONS:

- 1. If the existing soil is rocky it should be replaced by an appropriate soil for planting.
- 2. Add nutrients and other components to the soil to enhance the quality of planting soil mix.
- 3. Soil should be free from weeds (especially invasive ones) and plant roots to reduce future maintenance problems.
- 4. Soil to be free from big stones.
- 5. Soil to be free from high salinity elements.
- 6. A proper planting medium mix.
- 7. Adequate PH for the planting mix (6-7)

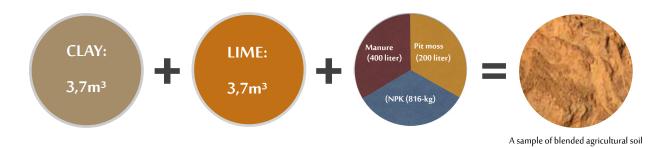


A proper volume of planting soil will improve the growth of the trees

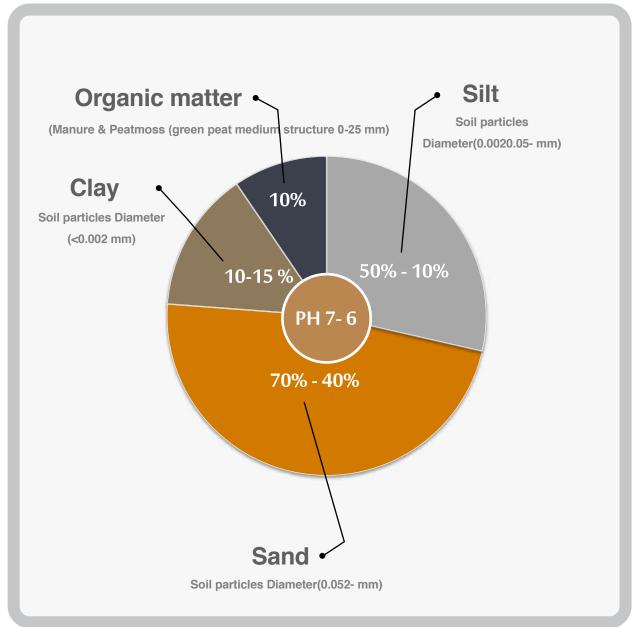
## B. Recommendations for mixing agricultural soil:

- 1. The site should be clean when the planting mix is placed.
- quired enough water for a proper mixture.
- 3. If there is a delay in planting, it is recommended to cover the planting medium.
- 4. Properly treated manure (clean from seeds, fermented, decomposed, etc).
- 2. On-site the mix of the planting soil re- 5. Proper pit moss (proper humidity,fermented,decomposed,etc).

#### Below a sample of 8m³ of planting medium mix:



#### **Correct Soil Texture**





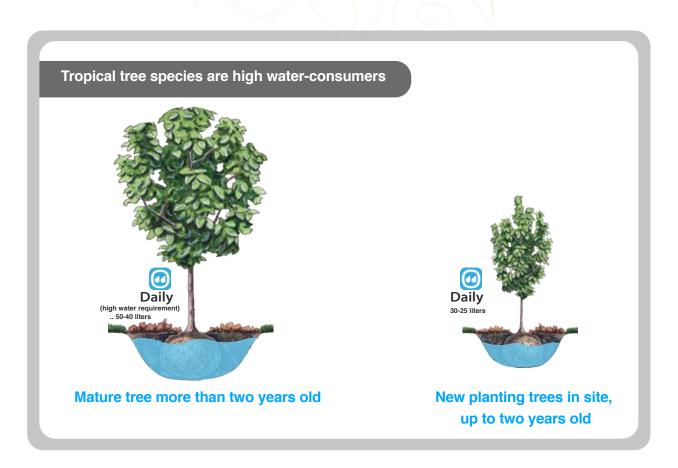
## **III.IRRIGATION REQUIREMENTS:**

The water is the major factor in the success of planting, especially during the first year of planting. The irrigation depends on:

- Water quality. Salinity level<1500pm
- Water quantity.
  The water needs will differ depending on the tree species and its age (refer to figure 3).

Item	Plant Type	Qty liter/day
1	Trees	60-50
2	Shrubs	20-15
3	Ground cover /M²	12
4	Grass/ M²	10

- · Irrigatio n provision this should be done at sunrise or after sunset.
- · Irrigation program. The water requirements should be reduced in the winter to half of the summer quantity.



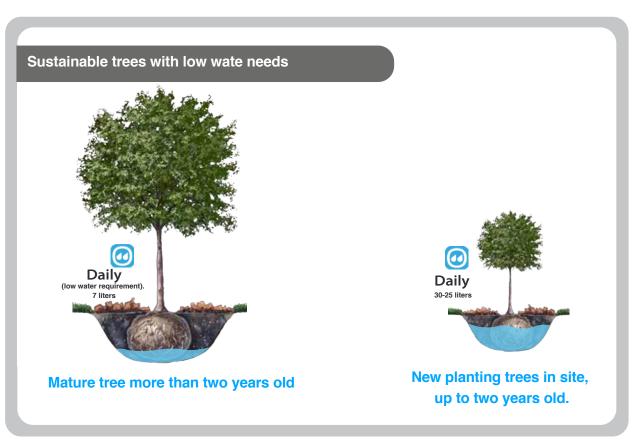


Figure 3: Irrigation Rates of Trees



## **IV. PLANTING SELECTION:**

Proper planting selection is crucial for a sustainable landscape that is adapted to the local climate.

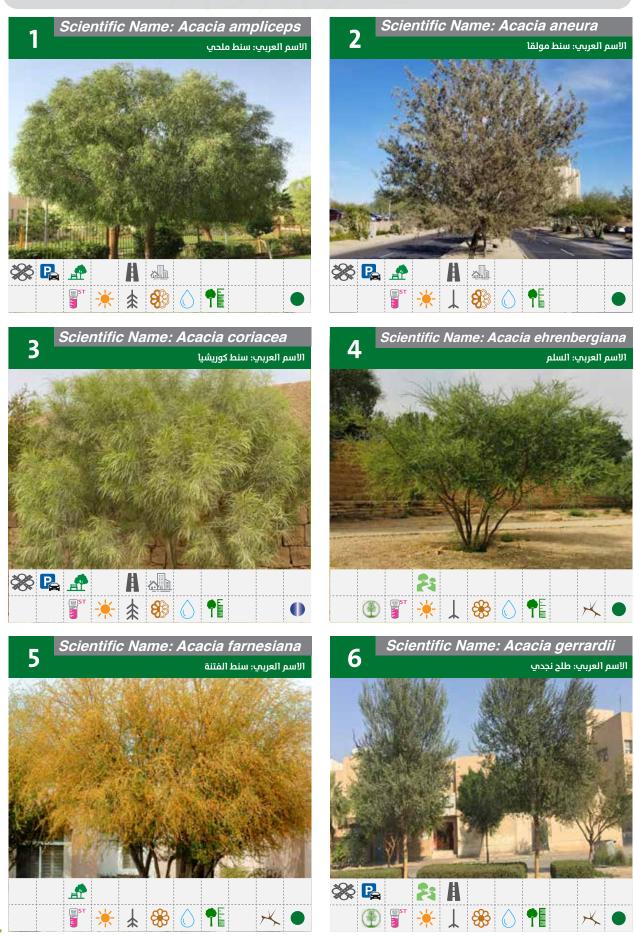
#### **GREEN RIYADH PROGRAM VEGETATION LEGEND:**

	GREEN	RIYADH PROGRAM VEGETATION	LEGEND
	HIGH	MEDIUM	Low
WATER REQUIREMENTS			
	LARGE	MEDIUM	SMALL
SIZE			
	DENSE FLOWERING	MEDIUM FLOWERING DENSITY	NO FLOWER
FLOWERING		<b>8</b>	
	RESISTANT	TOLERANT	SENSITIVE
SALINITY	ST E	E ST	□ ST
<b>⊢</b> ₩	FULL SUN	PARTIAL SUN	SHADE
SUNLIGHT	HIGH		
GROWTH	# HIGH	MEDIUM	sLow
	SENSITIVE		
	業		
	SUSTAINABILITY		
SUSTAINABILITY			an survive without wáter supply of irrigation water
SPIKY PLANTS	*	Spiky	/ plants
UTILITIES AFFECTED BY ROOTS		Utilities affe	ected by roots

	Green	speckled	Silver	Red
color of the leaves	•	•		

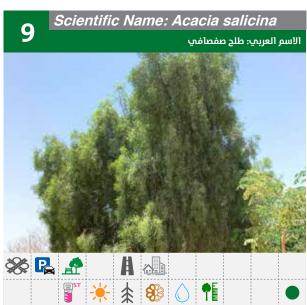
	M		s
		PRIVATE GARDENS	The open spaces within the courtyards of houses/housing
	A	ROADS	The road space includes all the road elements as the median, side-median, Sidewalks, intersections and roundabouts.
The right site for use in design		NATURAL OPEN SPACE AREAS	The road space includes all the road elements as the median, side-median, Sidewalks, intersections and roundabouts.
The right site fo		URBAN OPEN SPACE AREAS	Urban open spaces include all type of gardens and parks around the city as city parks, and neighborhood parks
	P <sub>=</sub>	CAR PARKING	Any car parking type around the city.
	<b>%</b>	CLOVERLEAF / INTERCHANGES	Any kind of junction around the city.

## I - TREES



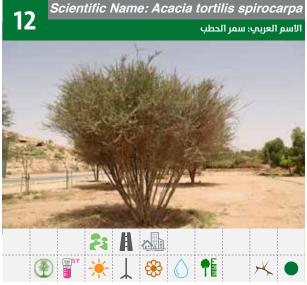








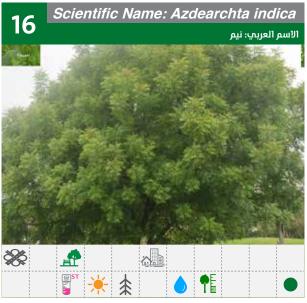




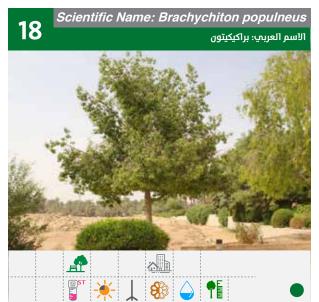








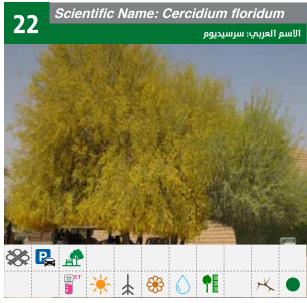


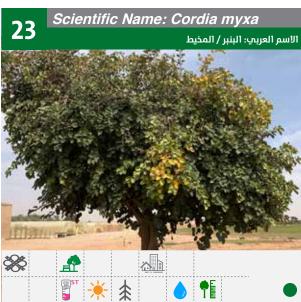




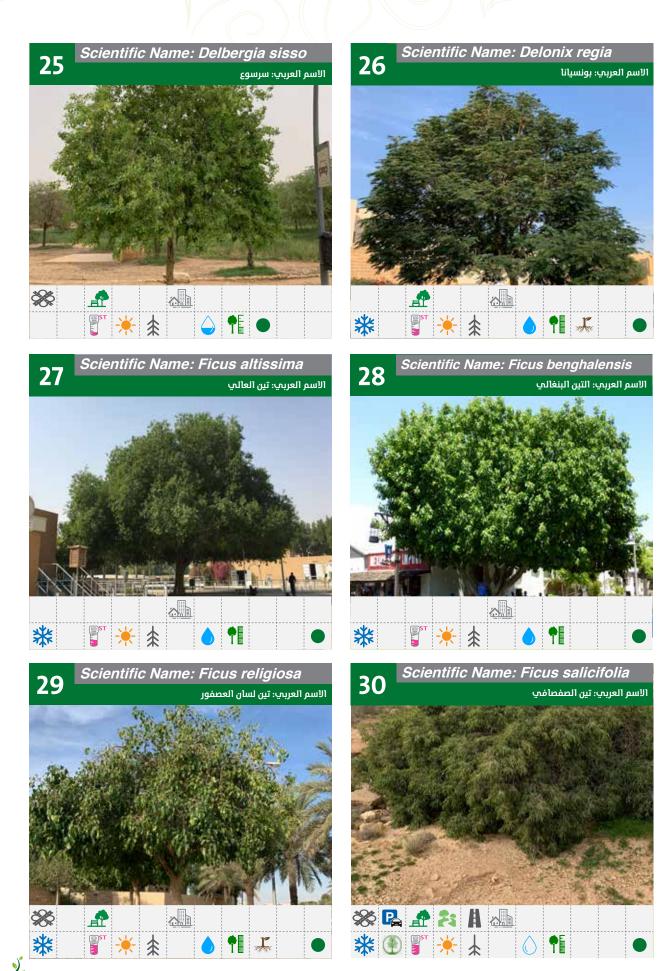


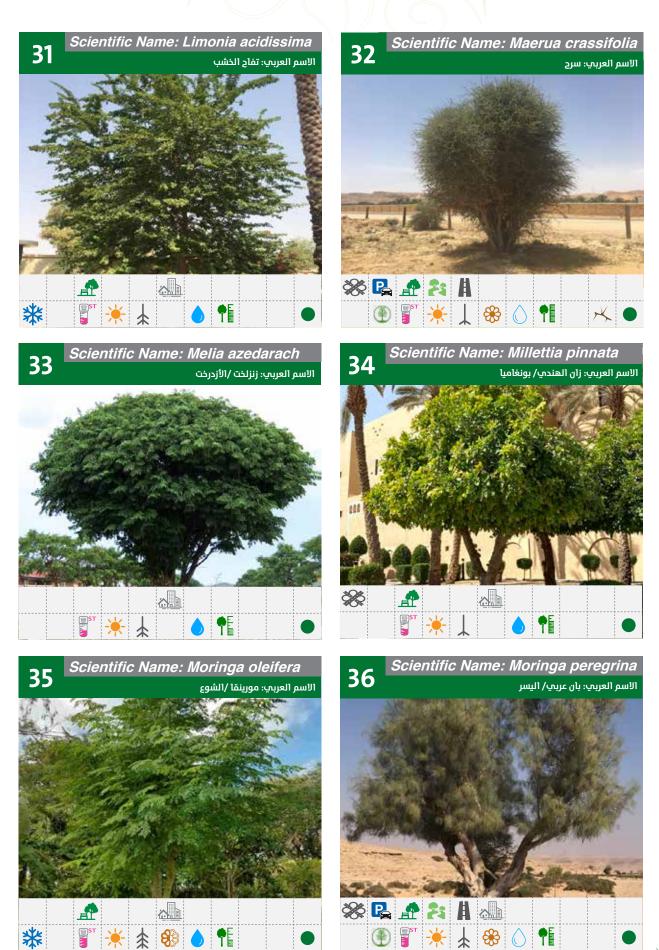


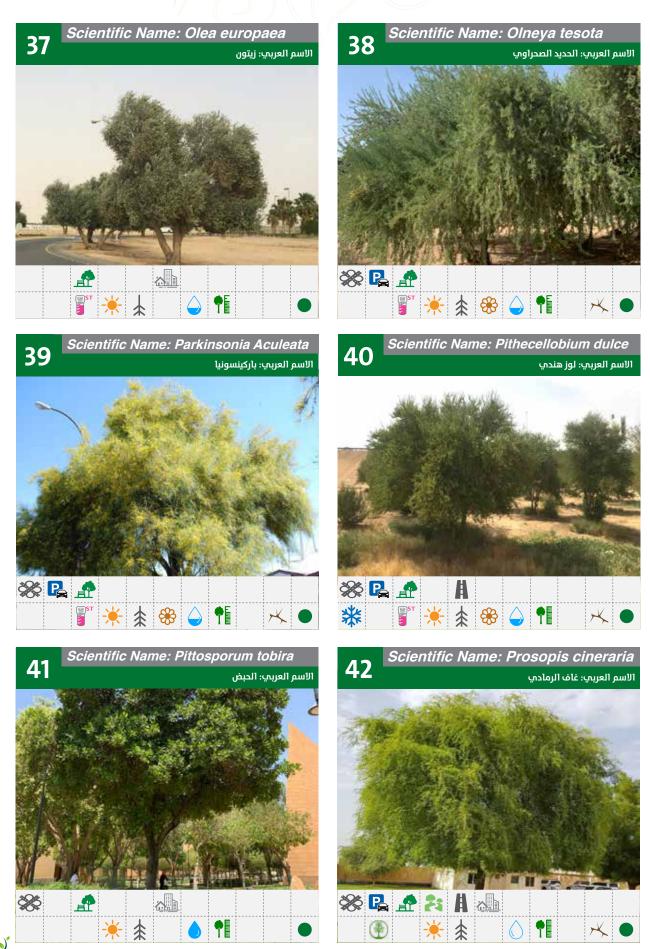






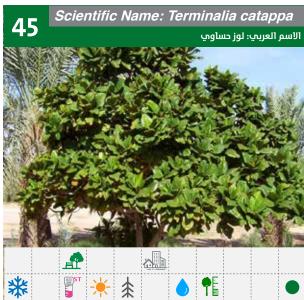




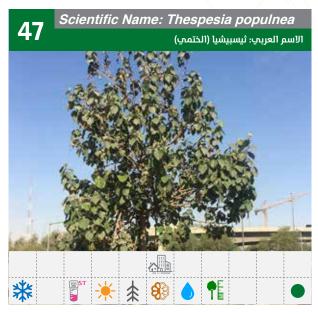




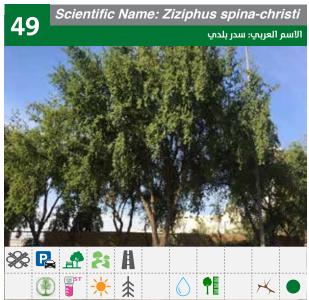






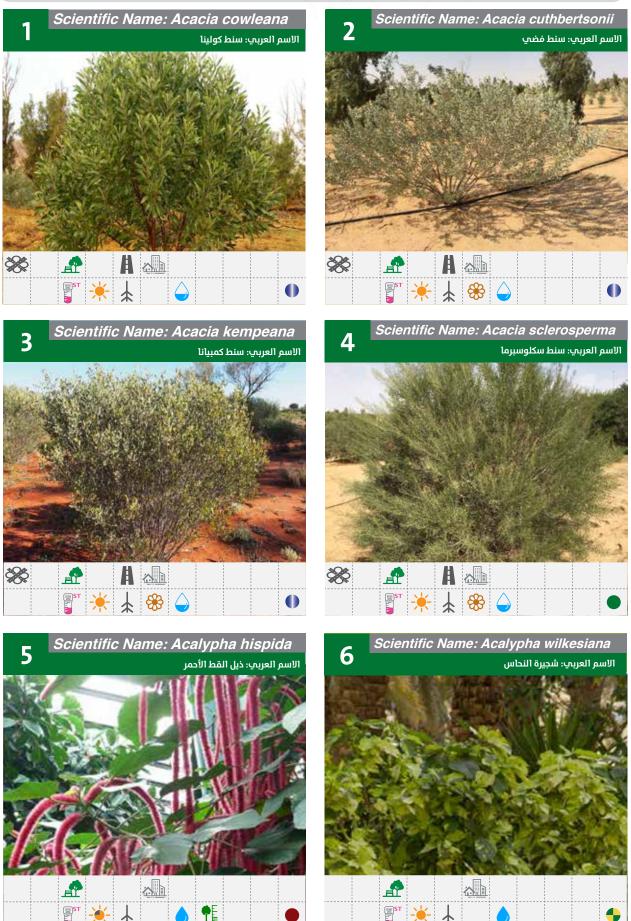


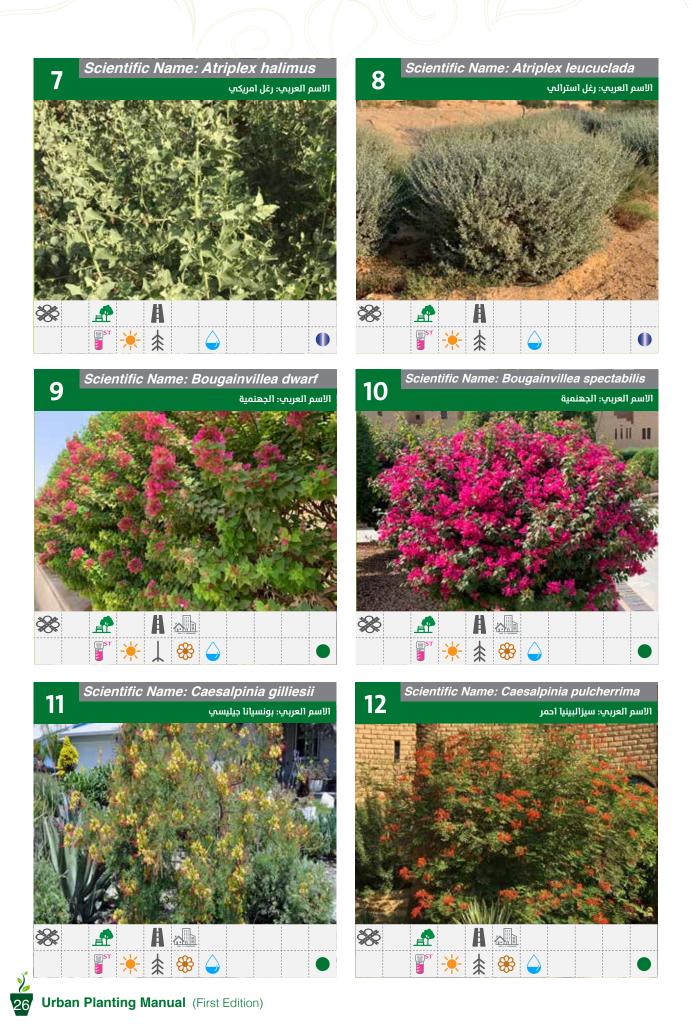




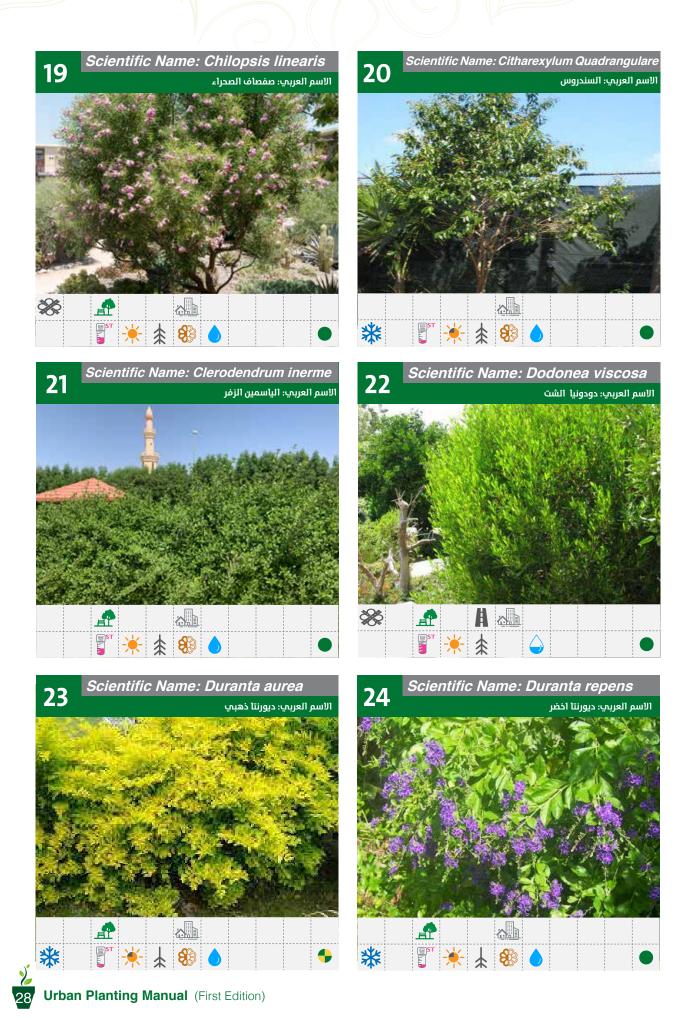


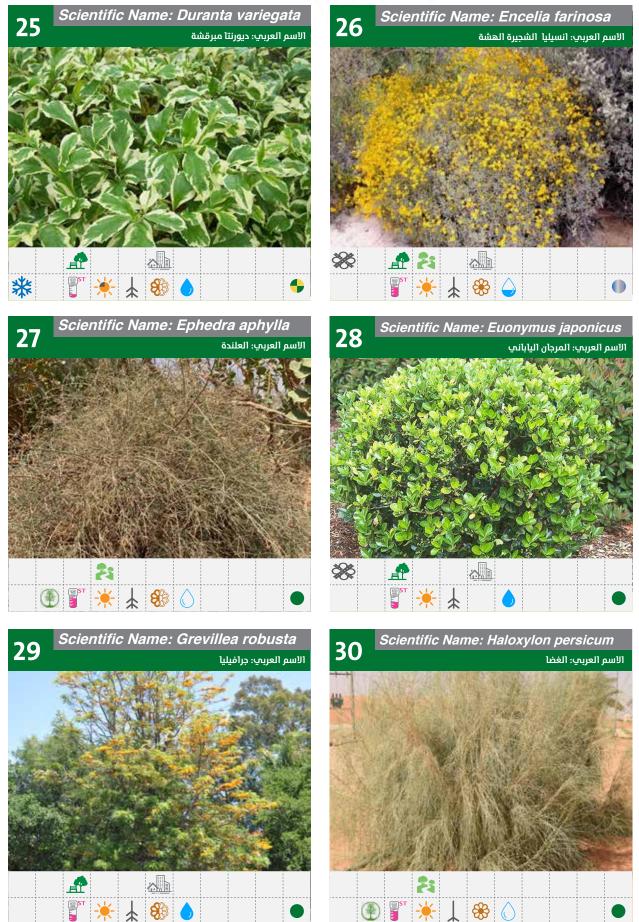
#### 2 - SHRUB

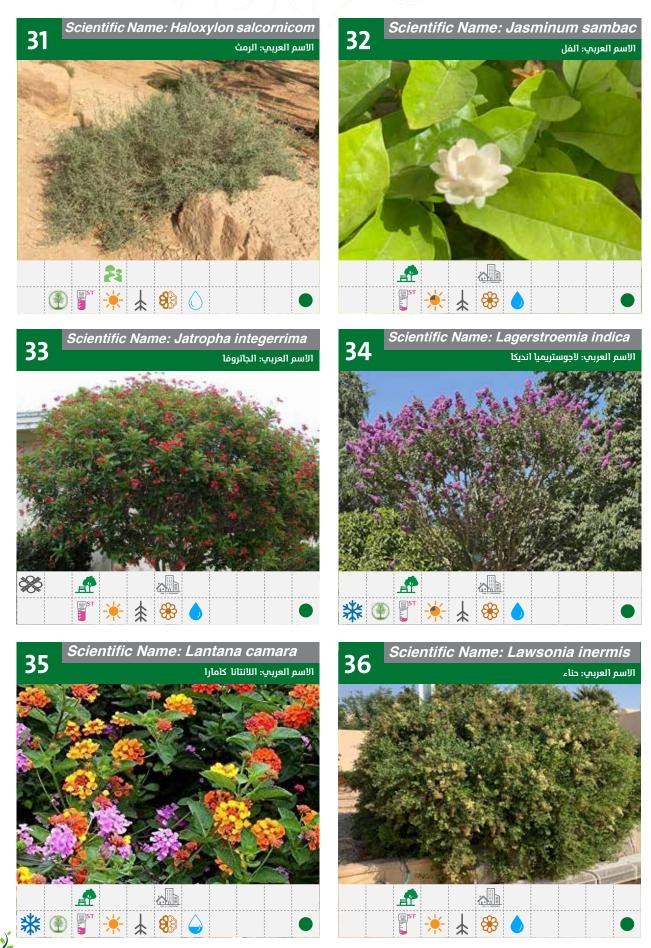




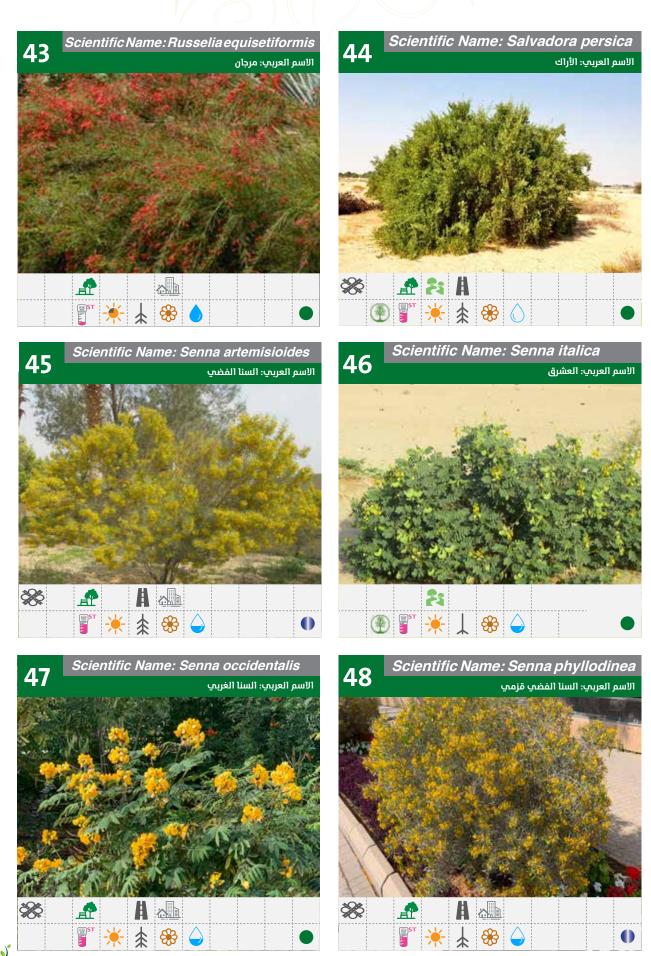


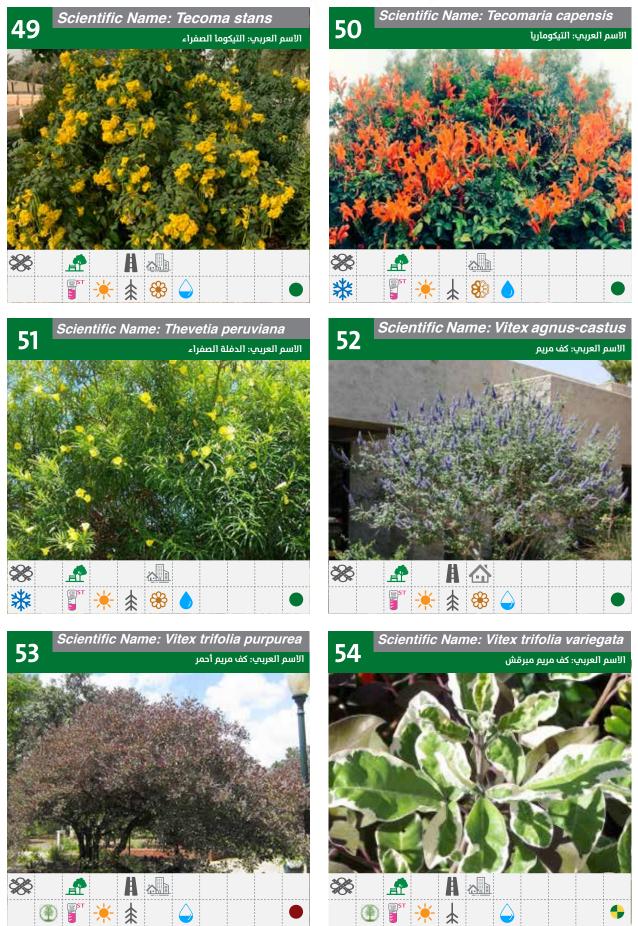




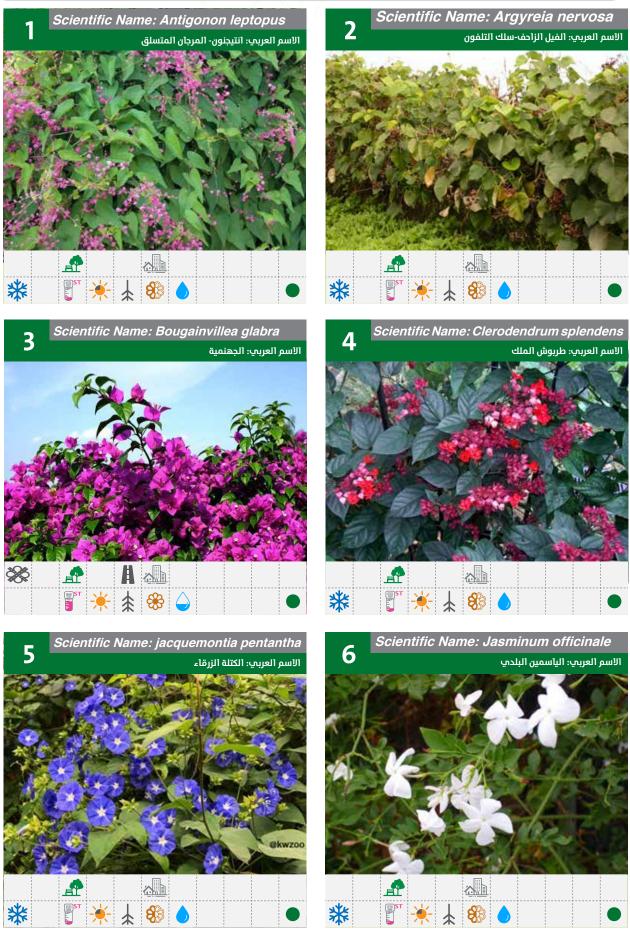


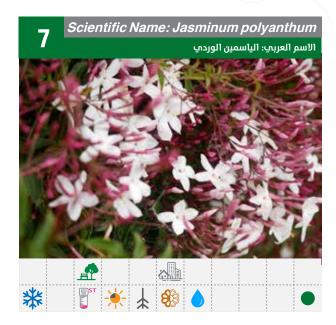




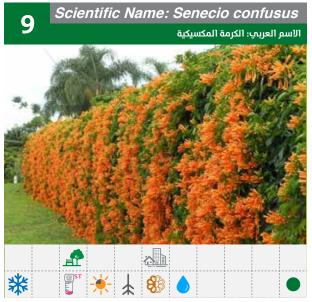


#### 3 - CLIMBERS



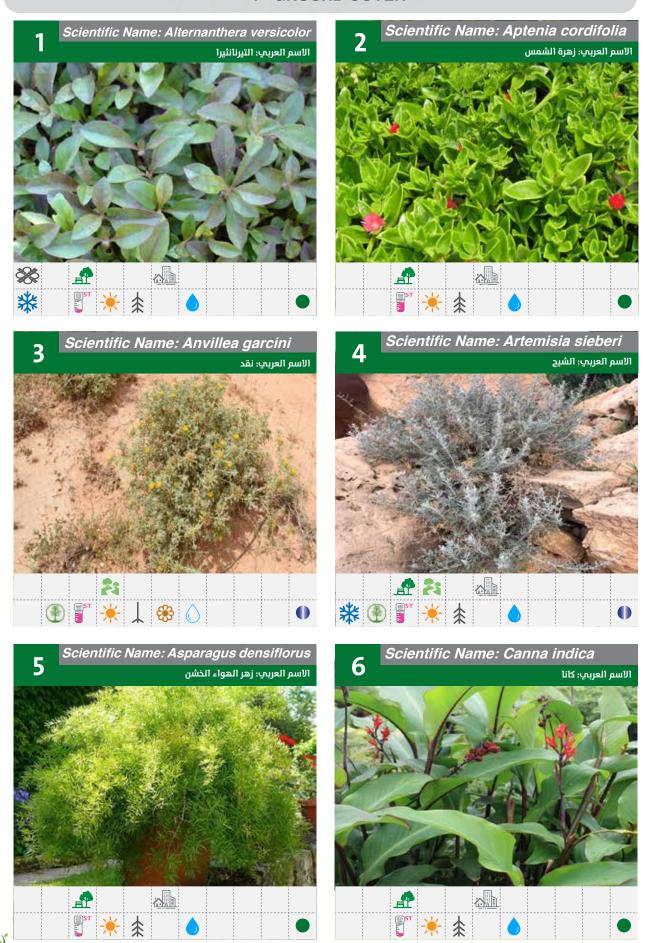








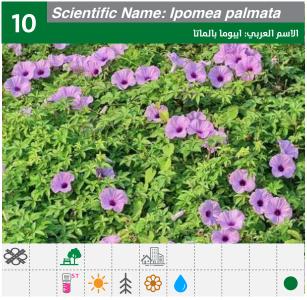
#### 4 - GROUND COVER

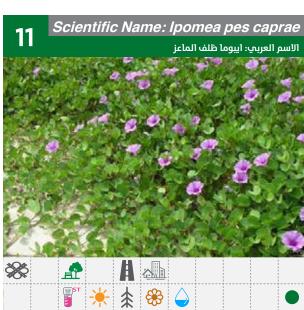














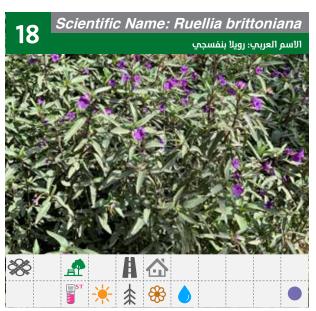


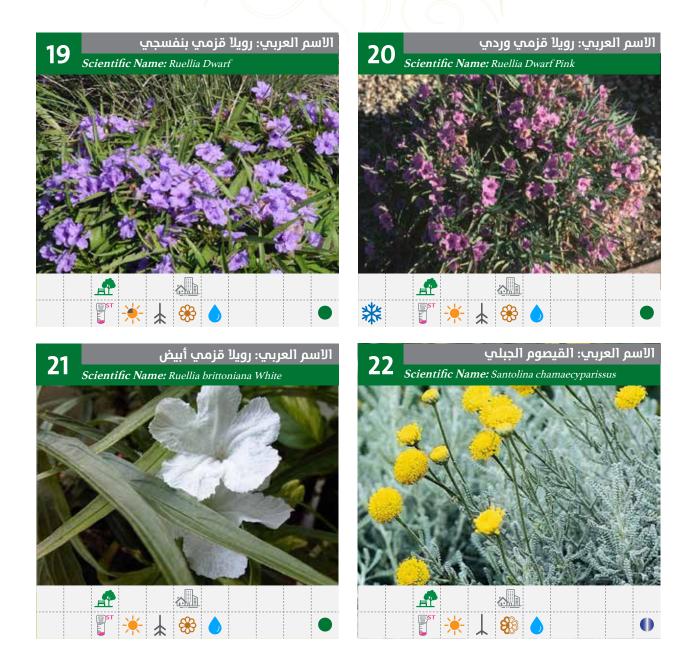




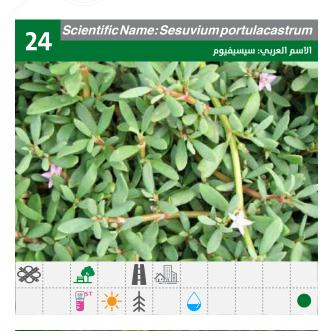




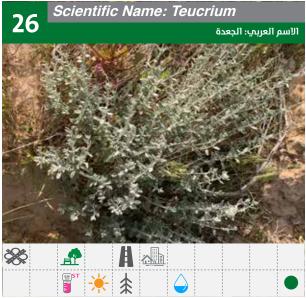




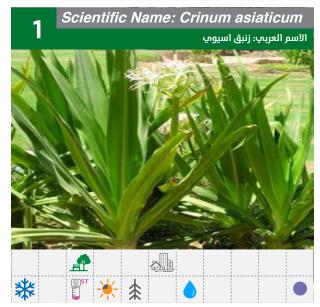


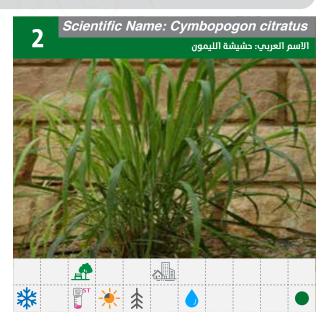




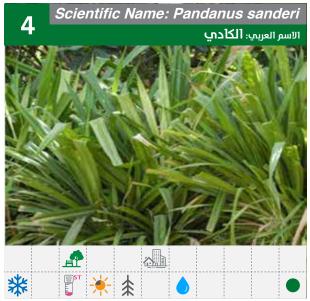


#### 5 - Herbs

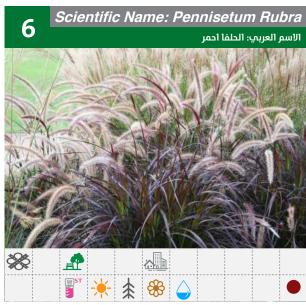






















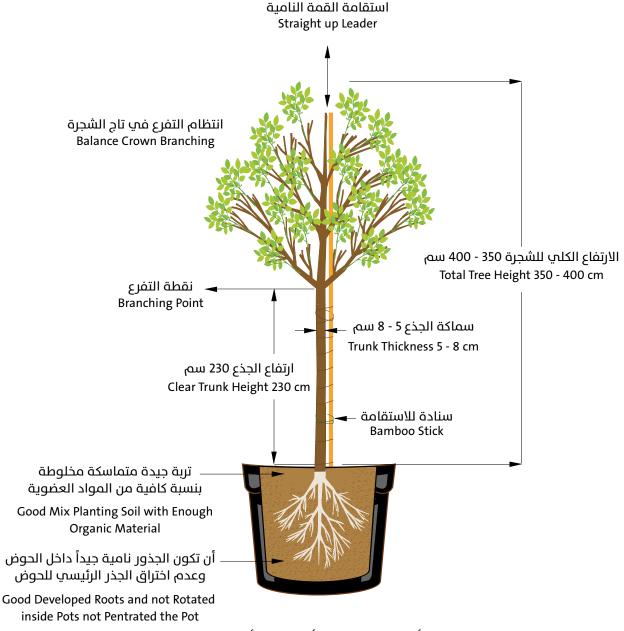


## **Total Plant Varieties of Urban Planting Manual**





### V. Typical trees for nurseries



تكون الأشجار محولة إلى الأحواض بحد أدنى 3 شهور قبل التوريد للموقع

> Trees Should be Shifted 3 Months Minimum Before supplying



# VI. Quick legend

## I - TREES

	Page				Plan	t info	
No	No	Arabic name	Scientific name	leaves Color	SIZE	WATER REQUIREMENTS	FLOWERING
T001	16	سنط ملحي	Acacia ampliceps	•	<b>P</b> E	$\Diamond$	
T002	16	سنط مولقا	Acacia aneura		•	$\Diamond$	
T003	16	سنط كوريشيا	Acacia coriacea	0	<b>PE</b>	$\Diamond$	
T004	16	السلم	Acacia ehrenbergiana		<b>P</b> E	$\Diamond$	<b>₩</b>
T005	16	سنط الفتنة	Acacia farnesiana		PE	$\Diamond$	
T006	16	طلح نجدي	Acacia gerrardii		<b>†</b>	$\Diamond$	<b>₩</b>
T007	17	طلح نيلي	Acacia nilotica		<b>P</b>	$\Diamond$	
T008	17	سنط قنديلي	Acacia pruincarpa		PE	$\Diamond$	<b>₩</b>
T009	17	طلح صفصافي	Acacia salicina		<b>PE</b>	$\Diamond$	
T010	17	طلح سیال	Acacia seyal		<b>P</b> E	$\Diamond$	<b>₩</b>
T011	17	سمر الرديانا	Acacia tortilis raddiana		•	$\Diamond$	
T012	17	سمر الحطب	Acacia tortilis spirocarpa	•	PE	$\Diamond$	<b>₩</b>
T013	18	سنط انیق	Acacia victoriae		PE	$\Diamond$	
T014	18	طلح فيفر / الحمى	Acacia xanthophloea		PE	$\Diamond$	<b>₩</b>
T015	18	لبخ	Albizia lebbeck		<b>P</b>		
T016	18	نتت	Azdearchta indica		PE		
T017	18	هجليج /لالوب	Balanites aegyptiaca	•	PE	$\Diamond$	
T018	18	براكيكيتون	Brachychiton populneus		<b>P</b> E	$\Diamond$	
T019	19	التنضب	Capparis decidua		PE	$\Diamond$	
T020	19	الميس الغربي	Celtis reticulata		•	$\Diamond$	<b>₩</b>
T021	19	خرنوب	Ceratonia siliqua		PE		
T022	19	سترستدتوه	Cercidium floridum		•	$\Diamond$	<b>₩</b>
T023	19	البنبر / المخيط	Cordia myxa		PE		
T024	19	كورديا	Cordia sebestena		PE		

			Plant info									
GROWTH RATE	SUNLIGHT EXPOSURE	SALINITY	SUSTAINABILITY	FROST	SPIKY PLANTS	UTILITIES AFFECTED BY ROOTS			Loca	ition		
余		ST					***	P			A	
1		ST					**	P			A	
*		ST					***	P			A	
1		ST	<b>(P)</b>		×					23		
*		₩ST			×							
1		ST	<b>(1)</b>		×		**	P		23	A	
*		ST	<b>(4)</b>	*	×			P			A	
1		ST						R			A	
*		ST					***				A	
*		ST			×		***	P			A	
1		ST	<b>(1)</b>		×		**	P		23	A	
1		ST	<b>(</b>		×					23	A	
*		ST					**	P			A	
*		ST			×		**					
*		ST		*			**					
*		ST					**					
1		ST			×		***	P		23	A	
1		ST										
1	****	est est	<b>(1)</b>		×					24		
*		ST			*		***	P				
*		ST										
*		ST			×			R				
*		ST										
*		ST		*								

## I - TREES

	Page				Plant	info	
No	No	Arabic name	Scientific name	leaves Color	SIZE	WATER REQUIREMENTS	FLOWERING
T025	20	سرسوع	Delbergia sisso	•	<b>P</b> E	<u></u>	
T026	20	بونسيانا	Delonix regia		<b>†</b>		
T027	20	تين عالي	Ficus altissima	•	•		
T028	20	التين البنغالي	Ficus benghalensis		<b>†</b>		
T029	20	تين لسان العصفور	Ficus religiosa		<b>?</b> [		
T030	20	تین صفصافی	Ficus salicifolia		<b>?</b> [	$\Diamond$	
T031	21	تفاح الخشب	Limonia acidissima		<b>?</b> [		
T032	21	سرح	Maerua crassifolia		<b>?</b>	$\Diamond$	<b>₩</b>
T033	21	زنزلخت/ أزدرخت	Melia azedarach		PE		
T034	21	زان هندي /بونغاميا	Millettia pinnata		<b>P</b>		
T035	21	مورینقا/ شوع	Moringa oleifera		PE		
T036	21	بان العربي /يسر	Moringa peregrina		<b>P</b>	$\Diamond$	<b>₩</b>
T037	22	زيتون	Olea europaea		<b>P</b>	$\Diamond$	
T038	22	الحديد الصحراوي	Olneya tesota		<b>P</b>	$\bigcirc$	
T039	22	باركينسونيا	Parkinsonia Aculeata	•	<b>P</b>	$\Diamond$	<b>₩</b>
T040	22	لوز هندي	Pithecellobium dulce		•	$\Diamond$	<b>₩</b>
T041	22	الحبض	Pittosporum tobira		<b>?</b> [		
T042	22	غاف الرمادي	Prosopis cineraria		<b>†</b>	$\Diamond$	
T043	23	فلفل رفيع الأوراق	Schinus Molle		PE	$\bigcirc$	
T044	23	فلفل عريض الأوراق	Schinus terebinthifolius		PE		
T045	23	لوز حساوي	Terminalia catappa		PE		
T046	23	ترميناليا	Terminalia ivorensis		<b>?</b> [		
T047	24	ثيسبيشيا (الختمي)	Thespesia populnea		PE		
T048	24	السدر البري	Ziziphus nummularia		PE	$\Diamond$	₩
T049	24	سدر بلدي	Ziziphus spina-christi		<b>†</b>	$\Diamond$	

			Plant info					//				
GROWTH RATE	SUNLIGHT EXPOSURE	SALINITY	SUSTAINABILITY	FROST	SPIKY PLANTS	UTILITIES AFFECTED BY ROOTS			Loca	tion		
*		⊚ST					**					
兼		■ST		*								
朱		ST		*								
朱		₪ST		*								
朱	-	ST		*								
*		ST	<b>(4)</b>	*				P		2	A	
*		ST		*								
1		ST	<b>(4)</b>		×			P		*	A	
*	-	ST										
1	-	ST										
*		ST		*								
*		ST						P		23	A	
*		ST										
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## 2 - SHRUB

	Page				Plant	info	
No	No	Arabic name	Scientific name	leaves Color	SIZE	WATER REQUIREMENTS	FLOWERING
5001	25	سنط كولينا	Acacia cowleana	0		$\Diamond$	
5002	25	سنط فضي	Acacia cuthbertsonii	0		$\Diamond$	<b>₩</b>
5003	25	سنط كمبيانا	Acacia kempeana	0		$\Diamond$	<b>₩</b>
5004	25	سنط سكلوسبرما	Acacia sclerosperma			$\Diamond$	**
S005	25	ذيل القط الأحمر	Acalypha hispida	•	7	•	
5006	25	شجيرة النحاس	Acalypha wilkesiana	•			
5007	26	رغل امریکی	Atriplex halimus	0		$\Diamond$	
S008	26	رغل استرالي	Atriplex leucuclada	0		$\Diamond$	
5009	26	الجهنمية	Bougainvillea dwarf			$\Diamond$	<b>₩</b>
5010	26	الجهنمية	Bougainvillea spectabilis			$\Diamond$	<b>₩</b>
S011	26	بونسيانا جيليسي	Caesalpinia gilliesii	•		$\Diamond$	<b>₩</b>
S012	26	سيزالبينيا احمر	Caesalpinia pulcherrima			$\Diamond$	<b>₩</b>
S013	27	الأرطب	Calligonum comosum			$\Diamond$	<b>₩</b>
S014	27	فرشاة الزجاج	Callistemon viminalis		7	$\Diamond$	<b>₩</b>
S015	27	لصف شفلح	Capparis spinosa		76	$\Diamond$	₩
S016	27	کاسیا جلوکا	Cassia Glauca		7	$\Diamond$	<b>₩</b>
S017	27	كاسيا نيموفيل	Cassia Nemophila			$\Diamond$	₩
S018	27	ملكة الليل	Cestrum nocturnum				<b>₩</b>
5019	28	صفصاف الصحراء	Chilopsis linearis				
S020	28	السندروس	Citharexylum Quadrangulare			•	
S021	28	الياسمين الزفر	Clerodendrum inerme	•		•	
5022	28	دودونيا الشت	Dodonea viscosa			$\Diamond$	
S023	28	ديورانتا ذهبي	Duranta aurea	•			
5024	28	ديورانتا اخضر	Duranta repens				
S025	29	ديورنتا مبرقشة	Duranta variegata	•			
S026	29	انسيليا الشجيرة الهشة	Encelia farinosa	0		$\bigcirc$	₩
5027	29	العلندة	Ephedra aphylla	•		$\Diamond$	

			Plant info					//				
GROWTH RATE	SUNLIGHT EXPOSURE	SALINITY	SUSTAINABILITY	FROST	SPIKY PLANTS	UTILITIES AFFECTED BY ROOTS			Loc	ation		
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## 2 - SHRUB

	Page				Plant	info	
No	No	Arabic name	Scientific name	leaves Color	SIZE	WATER REQUIREMENTS	FLOWERING
5028	29	المرجان الياباني	Euonymus japonicus	•		•	
S029	29	جرافيليا	Grevillea robusta	•			
S030	29	الغضا	Haloxylon persicum			$\Diamond$	₩
S031	30	الرمث	Haloxylon salcornicom	•		$\Diamond$	
S032	30	الفل	Jasminum sambac				₩
S033	30	الجاتروفا	Jatropha integerrima	•			
S034	30	لاجوستريميا انديكا	Lagerstroemia indica	•			₩
S035	30	اللانتانا كامارا	Lantana camara	•			
S036	30	حناء	Lawsonia inermis				₩
S037	31	ليكوفيليوم	Leucophyllum frutescens	0		$\Diamond$	₩
5038	31	المرخ	Leptadenia pyrotechnica			$\Diamond$	
5039	31	الآس	Myrtus communis	•		•	
5040	31	الدفلة	Nerium oleander			$\Diamond$	<b>₩</b>
S041	31	الياسمين الهندي	Plumeria obtusa	•			**
5042	31	العرفج	Rhanteriumepapposum			$\Diamond$	***
5043	32	مرجان	Russelia equisetiformis	•		•	<b>₩</b>
5044	32	الأراك	Salvadora persica			$\Diamond$	***
S045	32	السنا الفضي	Senna artemisioides	0		$\Diamond$	<b>₩</b>
5046	32	العشرق	Senna italica	•		$\Diamond$	**
S047	32	السنا الغربب	Senna occidentalis	•		$\Diamond$	<b>₩</b>
5048	32	السنا الفضي قزمي	senna phyllodinea	0		$\Diamond$	<b>₩</b>
S049	33	التيكوما الصفراء	Tecoma stans			$\Diamond$	<b>₩</b>
S050	33	التيكوماريا	Tecomaria capensis				
S051	33	الدفلة الصفراء	Thevetia peruviana				<b>₩</b>
S052	33	کف مریم	Vitex agnus-castus			$\Diamond$	<b>₩</b>
S053	33	كف مريم أحمر	Vitex trifolia purpurea			$\Diamond$	
S054	33	کف مریم مبرقش	Vitex trifolia variegata	•			

	Plant info										
GROWTH RATE	SUNLIGHT EXPOSURE	SALINITY	SUSTAINABILITY	FROST	SPIKY PLANTS	UTILITIES AFFECTED BY ROOTS		Loc	ation		
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## 3 - CLIMBERS

	Page				Plant	info	
No	No	Arabic name	Scientific name	leaves Color	SIZE	WATER REQUIREMENTS	FLOWERING
C001	34	انتيجنون- المرجان المتسلق	Antigonon leptopus	•			
C002	34	الفيل الزاحف-سلك التلفون	Argyreia nervosa	•			
C003	34	الجهنمية	Bougainvillea glabra	•		<b>\rightarrow</b>	<b>₩</b>
C004	34	طربوش الملك	Clerodendrum splendens	•			
C005	34	الكتلة الزرقاء	jacquemontia pentantha	•			
C006	34	الياسمين البلدي	Jasminum officinale				<b>8</b>
C007	35	الياسمين الوردي	Jasminum polyanthum	•			<b>8</b>
C008	35	الياسمين الأحمر- الهندي	Quisqualis indica				**
C009	35	الكرمة المكسيكية	Senecio confusus	•			

			Plant info								
GROWTH RATE	SUNLIGHT EXPOSURE	SALINITY	SUSTAINABILITY	FROST	SPIKY PLANTS	UTILITIES AFFECTED BY ROOTS		Location			
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## 4 - GROUND COVER

	Page			Plant info						
No	No	Arabic name	Scientific name	leaves Color	SIZE	WATER REQUIREMENTS	FLOWERING			
G001	36	التيرنانثيرا	Alternanthera versicolor							
G002	36	زهرة الشمس	Aptenia cordifolia							
G003	36	نقد	Anvillea garcini	0		$\Diamond$	<b>₩</b>			
G004	36	الشيح	Artemisia sieberi	0						
G005	36	زهر الهواء الخشن	Asparagus densiflorus							
G006	36	كانا	Canna indica	•						
G007	37	كاريسا	Carissa green carpet							
G008	37	كاريسا	Carissa grandiflora							
G009	37	الجازانيا الفضي صنف لوكلاينا	Gazania leucolaena	0			₩			
G010	37	ايبوما بالماتا	Ipomea palmata				₩			
G011	37	ايبوما ظلف الماعز	Ipomea pes caprae			$\bigcirc$	₩			
G012	37	اریسین	Iresine herbstii							
G013	38	زهرة فيجي	Lampranthus aureus							
G014	38	ليمونيستروم	Limoniastrum monopetalum	0		$\Diamond$				
G015	38	أقحوان الأفريقي	Osteospermum fruticosum				₩			
G016	38	زهرة الصباح	Portulaca							
G017	38	حصا البان، إكليل الجبل	Rosmarinus officinalis							
G018	38	رويلا بنفسجي	Ruellia brittoniana				₩			
G019	39	رويلا قزمي بنفسجي	Ruellia Dwarf				₩			
G020	39	رويلا قزمي وردي	Ruellia Dwarf Pink				₩			
G021	39	رويلا قزمي أبيض	Ruellia brittoniana White				<b>₩</b>			
G022	39	القيصوم الجبلي	Santolina chamaecyparissus	0						
G023	40	السنتوريا الفضية	Senecio cineraria	0						
G024	40	الدلب - سيسيفيوم	Sesuvium portulacastrum			$\Diamond$				
G025	40	المكحلة	Setcreasea purpurea							
G026	40	الجعدة	Teucrium			$\Diamond$				

			Plant info							
GROWTH RATE	SUNLIGHT EXPOSURE	SALINITY	SUSTAINABILITY	FROST	SPIKY PLANTS	UTILITIES AFFECTED BY ROOTS		Location		
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## 5 - Herbs

No	Page No	Arabic name	Scientific name	Plant info			
				leaves Color	SIZE	WATER REQUIREMENTS	FLOWERING
GR01	41	زنبق اسيوي	Crinum asiaticum	•			
GR02	41	حشيشة الليمون	Cymbopogon citratus	•			
GR03	41	الضعة	Lasiurus sindicus	0			
GR04	41	الكادث	Pandanus sanderi				
GR05	42	الثمام	Panicum turgidum	0			
GR06	42	الحلفا احمر	Pennisetum Rubra			$\bigcirc$	<b>₩</b>
GR07	42	الحلفا اخضر	Pennisetum Setaceum			$\Diamond$	



Author info:

For any Further information about the manual please contact Royal Commission For Riyadh City Green Riyadh Email: monlaa@rcrc.gov.sa 00966508541739 011-8021399



